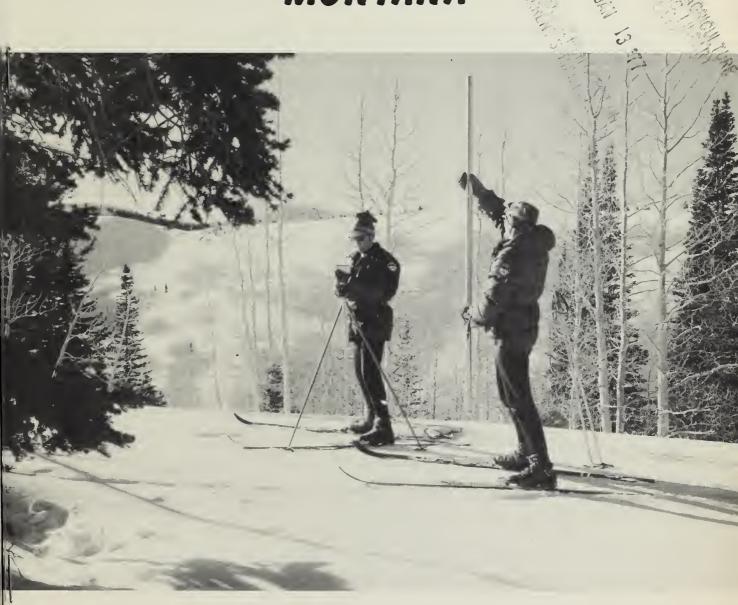
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WATER SUPPLY OUTLOOK FOR MONTANA



U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE

Collaborating with

MONTANA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies named above in cooperation with Federal, State and private organizations listed inside the back cover of this report.



TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO: SNOW COURSE MEASUREMENTS BY A SURVEY TEAM IN UTAH'S WASATCH RANGE.

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, West Technical Service Center, Room 510, 511 N.W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	Room 129, 2221 East Northern Lights Blvd., Anchorage, Alaska 99504
Arizona	Room 3008, 6029 Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P.O. Box 98, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1220 S.W. Third Ave., Portland, Oregon 97204
Utah	4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 841 38
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82602

CONSERVATION OF WATE

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia

WATER SUPPLY OUTLOOK FOR MONTANA

and FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Issued by

R.M. DAVIS

ADMINISTRATOR
SOIL CONSERVATION SERVICE
WASHINGTON, D C.

Released by

VANK HADERLIE

STATE CONSERVATIONIST SOIL CONSERVATION SERVICE Bozeman, Montana

In Cooperation with

J. A. ASLESON

DIRECTOR

Montana Agricultural Experiment Station

Report prepared by

PHILLIP E. FARNES, Snow Survey Supervisor DONALD J. HUFFMAN, Hydrologist GERALD A. BEARD, Civil Engineer CINDY L. JONES, Clerk/steno

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MONTANA WATER SUPPLY OUTLOOK January 1, 1977

* Snow cover is poor in all drainages. Water stored in the mountain snow pack is generally 30 to 50 per cent average. Storms near the beginning of the year have helped improve * conditions only slightly. * * * Soils under the snow pack are drier than * normal in all areas except for near average soil moisture in the extreme southwest * corner of the state. Unless * * * Unless drastic changes occur in the weather * pattern, water users throughout Montana can expect well below average streamflow next * * spring and summer.

COLUMBIA RIVER DRAINAGE

<u>Snow</u> - Early season snow pack has been very light in all headwaters areas. Most snow course water equivalents were near minimum of record for this date. The density of snow pack is very light, generally in the 18 to 20 per cent range. Soil moisture under the snow pack is also below average.

Streamflow - Volume forecasts of runoff will be issued after February 1 snow surveys. However, based on current snow pack and soil moisture conditions, runoff in the range of 60 to 75 per cent average is possible. The lack of high elevation snow will result in a shortage of irrigation water early in the season.

MISSOURI RIVER DRAINAGE

Snow - The mountain snow pack is deficient over the entire drainage.



Snow water equivalent of the snow is generally in the 25 to 65 per cent average range. Many snow courses have near minimum water equivalent of record for this date. Snow pack in the Highwood and Belt Mountains appears to be a little better, but still below average. Soils under the snow pack are drier than usual except for near average conditions in extreme headwaters of the Big Hole and the Beaverhead Rivers.

<u>Streamflow</u> - Volume runoff forecasts will be issued after the February 1 snow surveys. Based on current soil moisture and snow pack, runoff during spring and summer months will be 50 to 75 per cent average.

YELLOWSTONE RIVER DRAINAGE

Snow - Snow deposition has been well below average in all areas.

The current water level of the snow pack is 30 to 70 per cent average.

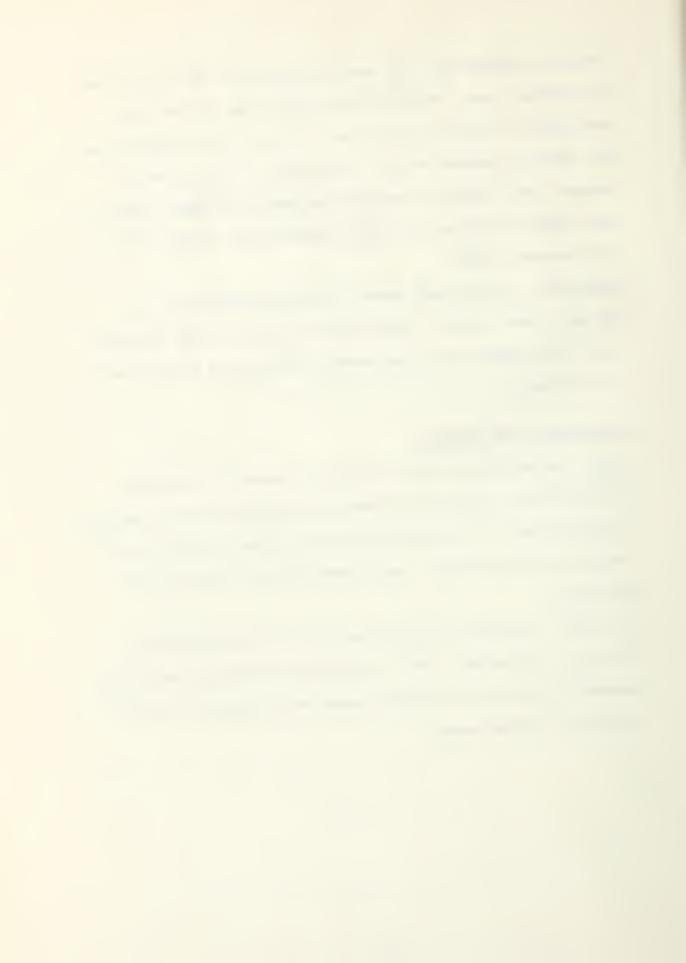
Snowfall intensity increased during recent storms, but snow levels remain well below average. Soils under the snow pack are drier than normal.

Streamflow - Forecasts of streamflow volume will be issued after

February 1 snow surveys. With current snow and moisture conditions,

streamflows during the spring and summer months may be in the 55 to

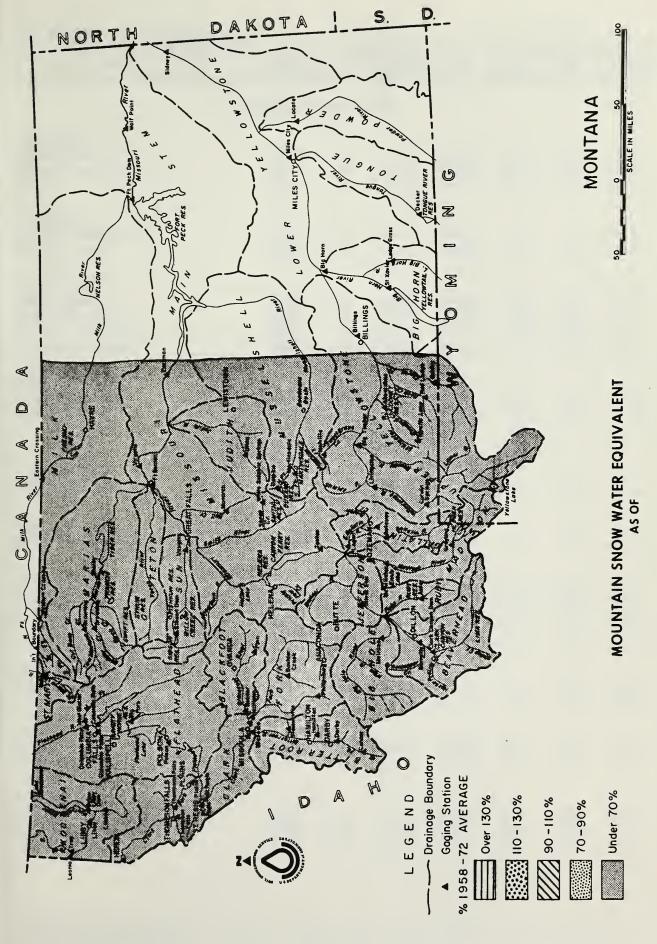
65 per cent average range.



SUMMARY OF SHOW MEASUREMENTS (COMPARISON WITH PREVIOUS YEARS)

Kootenai Flathead Upper Clark Fork Lower Clark Fork Bitterroot	10 18 3	- 53 30 31 31	47 44 31
Flathead Upper Clark Fork Lower Clark Fork Bitterroot MISSOURI RIVER DRAINAGE	18	30 31	44
Flathead Upper Clark Fork Lower Clark Fork Bitterroot MISSOURI RIVER DRAINAGE	18	30 31	44
Upper Clark Fork Lower Clark Fork Bitterroot MISSOURI RIVER DRAINAGE	18	30 31	44
Lower Clark Fork Bitterroot MISSOURI RIVER DRAINAGE	3	31	
Bitterroot MISSOURI RIVER DRAINAGE			31
MISSOURI RIVER DRAINAGE	7	31	71
			44
Jefferson			
	11	24	34
Madison .	8	20	29
Gallatin	10	31	45
Missouri Main Stem	7	42	61
Judith - Musselshell	4	58	81
Marias - Teton - Sun	3	52	45
Milk	3	65	50
YELLOWSTONE RIVER DRAINAGE			
Yellowstone (above Bighorn)	14	30	48
Big Horn	-	-	-
Little Big Horn	-	-	-
Tongue	-	-	-
Powder	-	-	-
SASKATCHEWAN RIVER DRAINAGE			
Bow	-	-	-
St. Mary's	1	65	36







DRAINAGE BASIN and/or	STATION	Profi	le (Inches)	Date of	S	oil Moisture (I	nches)
Name	Elevation	Depth	Capacity	Survey	This Year	Last Year	Average +
	COLUMBIA RI	VER BA	SIN				
Kootenai							
Baree Trail	3800	48	7.5	11-2	4.4	6.7	5.6
Murphy Lake R.S.	3000	48	22.6	11-11	18.9	19.4	18.8
Raven	3050	48	23.0	11-2	13.5	14.4	16.1
Flathead							
Desert Mountain	5600	54	8.4	10-28	5.2	8.3	6.6
Marias Pass	5250	54	6.5	10-25	3.4	5.4	4.4
Clark Fork							
Black Pine	7100	48	10.0	10-28	7.8	8.7	7.9
Lubrecht Forest	4100	48	26.3	11-1	14.3	18.6	14.7
Seeley Lake R.S.	4030	48	11.9	11-2	4.9	10.6	4.9
Skalkaho Summit	7260	48	10.8	10-28	9.7	10.6	10.1
Bitterroot							
Gibbons Pass	7100	48	7.1	11-1	5.4	6.1	4.9
Lolo Pass	5250	48	10.6	10-29	7.0	7.8	5.3
	MISSOURI RI	VER BA	SIN				
Beaverhead						10.0	0.6
Lakeview	6700	48	15.3	10-31	11.6	13.3	8.6
Madison							
West Yellowstone	6700	48	6.5	10-31	2.5	2.4	2.7
Gallatin							
Bridger Bowl	7250	48	17.0	11-3	14.8	14.9	15.4
College Site No. 2	4856	54	17.7	10-29	11.2	14.4	11.3
Lick Creek	6860	48	18.8	11-2	14.6	16.3	16.6
Twenty-One Mile	7150	48	10.0	11-2	5.0	4.3	5.0
Missouri Main Stem							
Kings Hill	7420	48	11.8	-	-	9.0	7.8
Stemple Pass	6350	48	5.9	11-2	3.1	5.6	4.0
Milk							
Beaver Creek	3950	48	20.9	10-28	6.7	8.9	7.7
Rocky Boy	4700	36	10.1	10-28	6.1	9.1	7.9
Yellowstone	(000	4.0	17.	11.0	0 0	10.0	11 7
Battle Ridge	6020	48	17.6	11-3	9.0	12.9	11.7
Northeast Entrance	7360	48	9.4	10-31	6.9	6.0	6.4
PMC Dryland	3700	48	20.7	11-1	5.3	6.2	_

⁺ Average for period of record.



DRAINAGE BASIN and/or STATION		Prof	ite (Inches)	Date of	So	il Moisture (I	nches)
Name	Elevation	Depth	Capacity	Survey	This Year	Last Year	Average +
COI	LUMBIA R	IVER B	ASIN				
Variable							
Kootenai Baree Trail	2000	7. 0	7 5	11 20	c /	6 0	6 2
Murphy Lake R. S.	3800 3000	48 48	7.5 22.6	11-30 12-3	5.4 19.0	6.8 19.4	6.2 19.2
Raven	3050	48	23.0	11-30	13.7	14.5	17.6
Na veii	3030	40	23.0	11-30	13.7	14.5	17.0
Flathead							
Desert Mountain	5600	54	8.4	_	_	_	_
Marias Pass	5250	54	6.5	11-22	3.6	5.8	4.8
Clark Fork							
Black Pine	7100	48	10.0	12-1	6.8	8.5	7.9
Lubrecht Forest	4100	48	26.3	12-3	14.3	24.0	15.8
Seeley Lake R. S.	4030	48	11.9	12-7	5.1	11.6	5.9
Skalkaho Summit	7260	48	10.8	12-1	8.6	-	-
Dittaura							
Gibbons Pass	7100	48	7.1	12-5	4.6	6.0	4.8
Lolo Pass	5250	48	10.6	12-1	7.4	7.8	5.9
LUIU 1455	3230	40	10.0	12-1	7 • 4	7.0	3.9
MIS	SOURI R	IVER B	ASIN				
							
Beaverhead							
Lakeview	6700	48	15.3	10-30	10.0	12.1	9.4
Madison							0.6
West Yellowstone	6700	48	6.5	12-1	1.8	2.0	2.6
Callanda							
Gallatin Bridger Bowl	7250	48	17.0	11-30	14.4	14.9	15.4
College Site No. 2	4856	54	17.7	12-3	10.2	16.5	13.1
Lick Creek	6860	48	18.8	11-30	13.5	_	16.1
Twenty-One Mile	7150	48	10.0	12-1	5.0	3.8	4.5
Twenty one little	7130	70	10.0	12 1	3.0	3.0	
Missouri Main Stem							
Kings Hill	7420	48	11.8	11-30	5.3	8.5	7.5
Stemple Pass	6350	48	5.9	12-10	3.0	4.8	4.0
Milk							- (
Beaver Creek	3950	48	20.9	11-29	6.6	8.5	7.6
Rocky Boy	4700	36	10.1	11-29	6.2	8.5	7.9
Yellowstone							
Battle Ridge	6020	48	17.6	11-30	9.0	14.5	12.7
Northeast Entrance	7350	48	9.4	12-3	5.7	5.1	6.4
PMC Dryland	3700	48	20.7	11-29	5.7	5.9	_
,							

⁺ Average for period of record.



SOIL MOISTURE January 1977

DRAINAGE BASIN and/or STATION

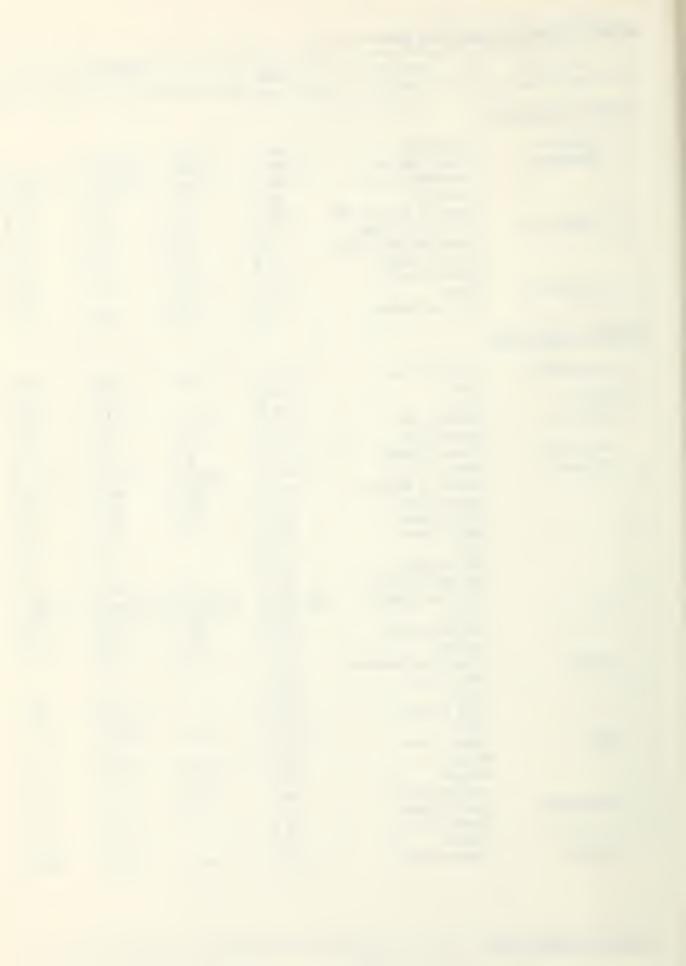
DRAINAGE BASIN and/or ST			ile (Inches)	Date of		Moisture (In	
Name	Elevation	Depth	Capacity	Survey	This Year	Last Year	Average +
	COLUMBIA RI	VER BA	SIN				
Kootenai							
Baree Trail	3800	48	7.5	1-3	4.7	-	-
Murphy Lake R. S.	3000	48	22.6	1-4	19.0	19.5	19.4
Raven	3050	48	23.0	1-3	13.7	16.0	17.6
Flathead							
Desert Mountain	5600	54	8.4	1-3	5.2	8.6	7.0
Marias Pass	5250	54	6.5	12-15		6.3	4.9
Clark Fork							
Black Pine	7100	48	10.0			8.4	7.5
Lubrecht Forest	4100	48	26.8	12-29	14.0	23.7	14.9
Seeley Lake R. S.	4030	48	11.9	1-3	4.7	11.5	6.5
Skalkaho Summit	7260	48	10.8	-	-	-	-
Bitterroot							
Gibbons Pass	7100	48	7.1	12-29	3.6	6.0	4.7
Lolo Pass	5250	48	10.6	_	-	7.8	5.9
note rass	3230	40	10.0			,.0	3.7
	MISSOURI RI	VER BAS	SIN				
Beaverhead							
Lakeview	6700	48	15.3	12-30	8.1	11.9	9.4
M = 1.4 =							
Madison West Yellowstone	6700	48	6.5	1-1	1.3	2.0	2.5
west fellowstone	6700	40	0.5	1-1	1.3	2.0	2.5
Gallatin							
Bridger Bowl	7250	48	17.0	12-29	15.6	14.7	15.5
College Site No. 2	4856	54	17.7	12-31	8.6	17.0	13.3
Lick Creek	6860	48	18.8	-	-	14.2	15.5
Twenty-One Mile	7150	48	10.0	12-31	2.2	4.1	4.4
Missouri Main Stem							
Kings Hill	7420	48	11.8	12-27	4.8	8.0	7.1
Stemple Pass	6350	48	5.9	1-3	3.3	5.3	4.0
beempre 1000	0330	70	3.7	1 3	3.3	3.3	,,,,
Milk							- (
Beaver_Creek	3950	48	20.9	12-30	8.0	8.7	7.6
Rocky Boy	4700	36	_10.1	12-30	6.1	8.5	7.4
Yellowstone							
Battle Ridge	6020	48	17.6	12-29	8.6	12.9	12.5
Northeast Entrance	7350	48	9.4	12-27	4.4	5.1	6.1
PMC Dryland	3700	48	20.7			6.6	-

⁺ Average for period of record.



RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH

COLUMBIA RIVER BASIN Capacity This Year Cast Year Average	0	RESERVOIR	Usable	-	Usable Storage	
Kootenai Koocanusa 5,694.0 3,736.0 3,734.0	Basin or Stream	NESERVOIR	Capacity	This Year	Last Year	Average
Flathead Hungry Horse 3,428.0 2,650.0 2,953.0 2,766.0 1,423.0 1,462.0 1,462.0 1,423.0 1,462.0 1,462.0 1,423.0 1,462.0 1,	COLUMBIA RIVER BASI	<u>IN</u>				
Flathead Hungry Horse 3,428.0 2,650.0 2,953.0 2,766.0 1,423.0 1,462.0 1,462.0 1,423.0 1,462.0 1,462.0 1,423.0 1,462.0 1,	Kootenai	Koocanusa	5.694.0	3.736.0	3.734.0	. <u>-</u>
Flathead Lake				•	•	2,766.0
Camas (4) 45.2 14.9 16.6 22.1			-	-	•	
Mission Valley (8)			•	•		22.1
Clark Fork						31.4
Lower Willow Creek 4.9 2.2 3.8 1.1	Clark Fork					
Nevada Creek 12.6 3.9 9.0 4.2						1.1
Noxon Rapids						
### Bitterroot Como Painted Rocks 31.7 0.0 23.2 23.5						
### Painted Rocks 31.7 0.0 23.2 23.5 #### AUSSOURI RIVER BASIN Beaverhead Clark Canyon 328.9 157.5 158.0 138.9 Lima	Bitterroot					
Beaverhead Clark Canyon 328.9 157.5 158.0 138.9					23.2	23.5
Beaverhead Clark Canyon 328.9 157.5 158.0 138.9						
Lima	MISSOURI RIVER BASI	<u>IN</u>				
Lima	Beaverhead	Clark Canyon	328.9	157.5	158.0	138.9
Ruby Ruby 38.8 21.1 20.0 Madison Hebgen Lake 377.5 221.8 252.3 201.9 Ennis Lake 41.0 34.1 35.2 36.7 Gallatin Middle Creek 8.0 2.7 3.3 3.0 Missouri Canyon Ferry 2,043.0 1,887.0 1,837.0 1,717.0 Hauser & Helena 61.9 62.5 61.9 59.6 Lake Helena 10.4 10.7 10.4 9.6 Holter Lake 81.9 79.3 80.0 71.3 Smith River 10.6 - 9.3 5.7 Bair 7.0 5.3 4.0 Martinsdale 23.1 17.5 7.6 Martinsdale 23.1 17.5 7.6 Martinsdale 19.140.0 16,641.0 18,180.0 13,450.0 Sun Gibson 99.0 59.0 65.1 36.9 Willow Creek 32.2 26.6 26.9		•	84.0	_	43.7	31.2
Madison Hebgen Lake Ennis Lake 377.5 221.8 252.3 201.9 Gallatin Middle Creek 8.0 2.7 3.3 3.0 Missouri Canyon Ferry 2,043.0 1,887.0 1,837.0 1,717.0 Hauser & Helena 61.9 62.5 61.9 59.6 Lake Helena 10.4 10.7 10.4 9.6 Holter Lake 81.9 79.3 80.0 71.3 Smith River 10.6 - 9.3 5.7 Bair 7.0 5.3 4.0 Martinsdale 23.1 17.5 7.6 Poet Peck Lake 19,140.0 16,641.0 18,180.0 13,450.0 Sun Gibson 99.0 59.0 65.1 36.9 Willow Creek 32.2 26.6 26.9 18.6 Pishkun 32.0 16.6 17.9 17.7 Marias Lower Two Medicine 11.9 - - - Four Horns	Ruby	Ruby				20.0
Ennis Lake	-	•		221.8		201.9
Gallatin Middle Creek 8.0 2.7 3.3 3.0 Missouri Canyon Ferry 2,043.0 1,887.0 1,837.0 1,717.0 Hauser & Helena 61.9 62.5 61.9 59.6 Lake Helena 10.4 10.7 10.4 9.6 Holter Lake 81.9 79.3 80.0 71.3 Smith River 10.6 - 9.3 5.7 Bair 7.0 5.3 4.0 Martinsdale 23.1 17.5 7.6 Deadman's Basin 72.2 44.9 54.4 41.2 Fort Peck Lake 19,140.0 16,641.0 18,180.0 13,450.0 Sun Gibson 99.0 59.0 65.1 36.9 Willow Creek 32.2 26.6 26.9 18.6 Pishkun 32.0 16.6 17.9 17.7 Marias Lower Two Medicine 11.9 - - - Four Horns 19.2 - - - - Swift 30.0 23.9 <t< td=""><td></td><td>_</td><td></td><td></td><td></td><td></td></t<>		_				
Missouri Canyon Ferry Hauser & Helena (61.9) 62.5 (61.9) 1,837.0 1,717.0 Hauser & Helena (61.9) 62.5 (61.9) 59.6 Lake Helena (10.4) 10.7 (10.4) 9.6 Holter Lake (81.9) 79.3 (80.0) 71.3 Smith River (10.6) - 9.3 (5.7) 5.3 4.0 Martinsdale (23.1) 17.5 (7.6) 7.6 Martinsdale (23.1) 17.5 (7.6) 7.6 Deadman's Basin (72.2) 44.9 (54.4) 41.2 Fort Peck Lake (19,140.0) 16,641.0 (18,180.0) 13,450.0 Sun (Gibson (99.0) 59.0 (65.1) 36.9 Willow Creek (32.2) 26.6 (26.9) 18.6 Pishkun (32.0) 16.6 (17.9) 17.7 Marias (10.4) Lower Two Medicine (11.9)	Gallatin					
Hauser & Helena 61.9 62.5 61.9 59.6 Lake Helena 10.4 10.7 10.4 9.6 Holter Lake 81.9 79.3 80.0 71.3 Smith River 10.6 - 9.3 5.7 Bair 7.0 5.3 4.0 Martinsdale 23.1 17.5 7.6 Deadman's Basin 72.2 44.9 54.4 41.2 Fort Peck Lake 19,140.0 16,641.0 18,180.0 13,450.0 Sun Gibson 99.0 59.0 65.1 36.9 Willow Creek 32.2 26.6 26.9 18.6 Pishkun 32.0 16.6 17.9 17.7 Marias Lower Two Medicine 11.9 Swift 30.0 23.9 14.1 Lake Francis 111.9 94.7 78.1 Lake Francis 111.9 94.7 78.1 Tiber 1,347.0 534.3 583.0 579.1 Milk Beaver Creek 3.5 1.3 - Fresno 127.2 68.6 101.6 59.0 Nelson 66.8 48.7 52.2 44.4 A2.2 Lake Sherburne 66.2 13.3 25.7 16.5 Yellowstone Mystic Lake 21.0 5.7 12.6 14.1 Tongue River 68.0 34.0 25.8 Cooney 27.4 12.2 13.4						
Lake Helena 10.4 10.7 10.4 9.6 Holter Lake 81.9 79.3 80.0 71.3 Smith River 10.6 - 9.3 5.7 Bair 7.0 5.3 4.0 Martinsdale 23.1 17.5 7.6 Deadman's Basin 72.2 44.9 54.4 41.2 Fort Peck Lake 19,140.0 16,641.0 18,180.0 13,450.0 Sun Gibson 99.0 59.0 65.1 36.9 Willow Creek 32.2 26.6 26.9 18.6 Pishkun 32.0 16.6 17.9 17.7 Marias Lower Two Medicine 11.9 Four Horns 19.2 Swift 30.0 23.9 14.1 Lake Francis 111.9 94.7 78.1 Tiber 1,347.0 534.3 583.0 579.1 Milk Beaver Creek 3.5 Fresno 127.2 68.6 101.6 59.0 Nelson 66.8 48.7 52.2 44.4 Lake Sherburne 66.2 13.3 25.7 16.5 Yellowstone Mystic Lake 21.0 5.7 12.6 14.1 Tongue River 68.0 34.0 25.8 Cooney 27.4 12.2 13.4	11100001		•		•	
Holter Lake						
Smith River 10.6						
Bair 7.0 5.3 4.0 Martinsdale 23.1 17.5 7.6 Deadman's Basin 72.2 44.9 54.4 41.2 Fort Peck Lake 19,140.0 16,641.0 18,180.0 13,450.0 Sun Gibson 99.0 59.0 65.1 36.9 Willow Creek 32.2 26.6 26.9 18.6 Pishkun 32.0 16.6 17.9 17.7 Marias Lower Two Medicine 11.9 Four Horns 19.2 Swift 30.0 23.9 14.1 Lake Francis 111.9 94.7 78.1 Tiber 1,347.0 534.3 583.0 579.1 Milk Beaver Creek 3.5 1.3 - Fresno 127.2 68.6 101.6 59.0 Nelson 66.8 48.7 52.2 44.4 Lake Sherburne 66.2 13.3 25.7 16.5 Yellowstone Mystic Lake 21.0 5.7 12.6 14.1 Tongue River 68.0 34.0 25.8 Cooney 27.4 12.2 13.4				-		
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SNOW			THIS YEAR		PAST R	ECORD
DRAINAGE BASIN and/or SNOW COURSE		Date	Snow Depth	Water Content	Water Conte	ent (inches)
NAME	Elevation	of Survey	(Inches)	(inches)	Last Year	Average

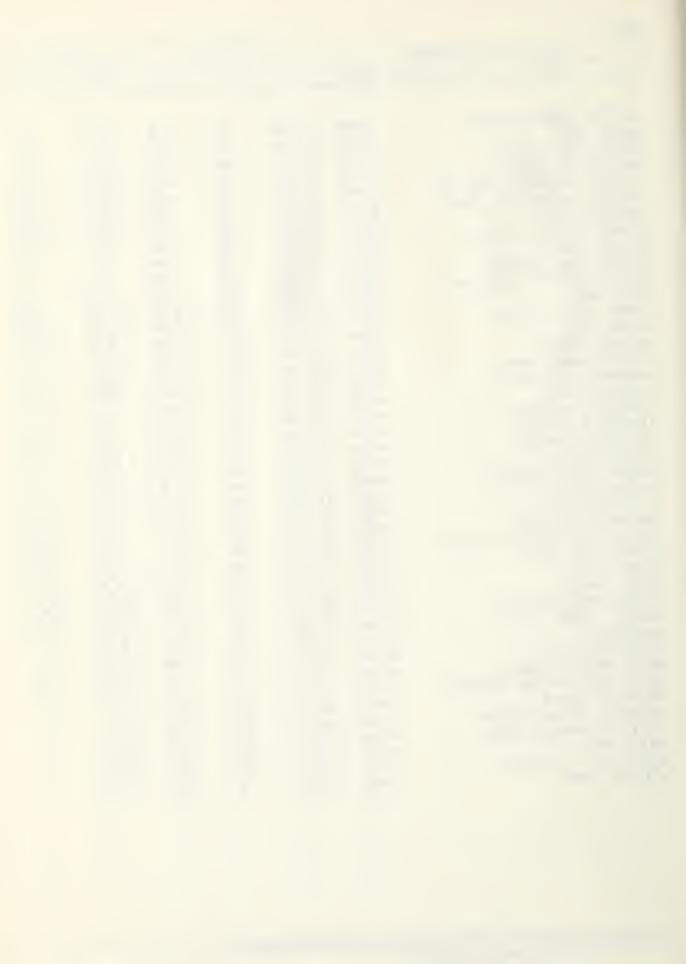
ARCH FALLS	7350	12/28	12	2.2	9.5	5.5
BADGER PASS	6900	1/05	48	10.5A	21.5	21.2
BANFIELD MOUNTAIN PILLOW	5600	1/01	SP	2.0	10.6	9.6
BASIN CREEK	7180	12/27	6	•8	•	•
BATTLE RIDGE	6020	12/29	8	1.3	5.2	3.0
BEAR PAW SKI AREA	5200	12/30	14	1.6	•	2.6
BIG COULEE	5100	12/28	16	3.9	2.8	-
BIG SKY	7700	12/29	18	3.5	9.1	7.2
BIG SPRINGS (ID)	6500	12/31	10	1.8	10.5	7.8
BLACK BEAR	7950	12/29	20	3.7	24.8	-
BLACK BEAR PILLOW	7950	12/29	SP	5.3	21.7	-
BLACK PINE	7100	12/29	11	1.6	9.0	3.4
BLACK PINE PILLOW	7100	12/29	SP	2.0	11.3	5.4
BLUE LAKE	5900	1/05	28	5.0A	8.0	11.8
BOXELDER CREEK	5100	12/30	17	3.2	-	-
BRIDGER BOWL	7250	12/29	24	5.6	17.8	12.0
BRIDGER BOWL PILLOW	7250	12/29	SP	6.8	16.7	13.2
BULL MOUNTAIN	6600	12/30	5	•6	3.2	•
CAMP CREEK (ID)	6800	12/29	0	• 0	4.3	4.3
CANYON (WY)	7750	12/31	17	3.2	10.4	6.1
CARROT BASIN	9000	12/30	23	4.4	8.02	17.0
CARROT BASIN PILLOW	9000	12/30	SP	4.9	16.2	10.9
CHESSMAN RESERVOIR	6200	12/28	4	1.3	1.6	1.3
COLE CREEK	7850	12/29	14	3.3	11.0	
COLE CREEK PILLOW	7850	12/29	SP	3.8	10.2	-
COMBINATION	5600	12/29	7	• 8	3.0	2.6
COMBINATION PILLOW	5600	12/29	SP	1.7	3.2	**
COOKE STATION	8150	12/27	25	4.4	14.0	-
COYOTE HILL	4200	1/03	14	2.3	5.0	4.5
DALY CREEK	5780	12/28	11	2.0	7.0	-
DEADMAN CREEK	6450	12/27	0	4.9	6.4	4.3
DEADMAN CREEK PILLOW	6450	12/27	SP	4.7	5.5	4.8
DESERT MOUNTAIN	5600	1/03	16	3.8	5.2	7.3
DEVILS SLIVE	8100	12/28	26	6.2	14.8	10.1
DISCOVERY BASIN	7050	12/28	12	2.3	7.4	-
DIX HILL	6400	1/03	12	2.2	6.4	•
EMERY CREEK	4350	1/03	19	3.8	4.6	-
EMERY CREEK PILLOW	4550	1/03	SP	3.4	-	•
FISH CREEK	8000	12/27	6	• 9	•	
FISHER CRELK	9100	12/27	42	7.9	26.2	14.4
FISHER CREEK PILLOW	9100	12/27	SP	9.4	24.3	14.8
FLEECER RIUGE	7500	12/30	10	1.4	8.4	
FOURTH OF JULY	3450	1/03	4	• 8	-	•
FRIDAY HILL	4620	1/03	16	3.8	•	430
FROHNER MEADOWS	6480	12/28	9	2.0	3.7	
FROHNER MEADOWS PILLOW	6480	12/28	SP	1.9	5.0	
GIBBONS PASS	7100	12/29	18	3.8	11.5	9.5
GRIZZLY PEAK	8400	12/29	13	3.2	10.3	8.7
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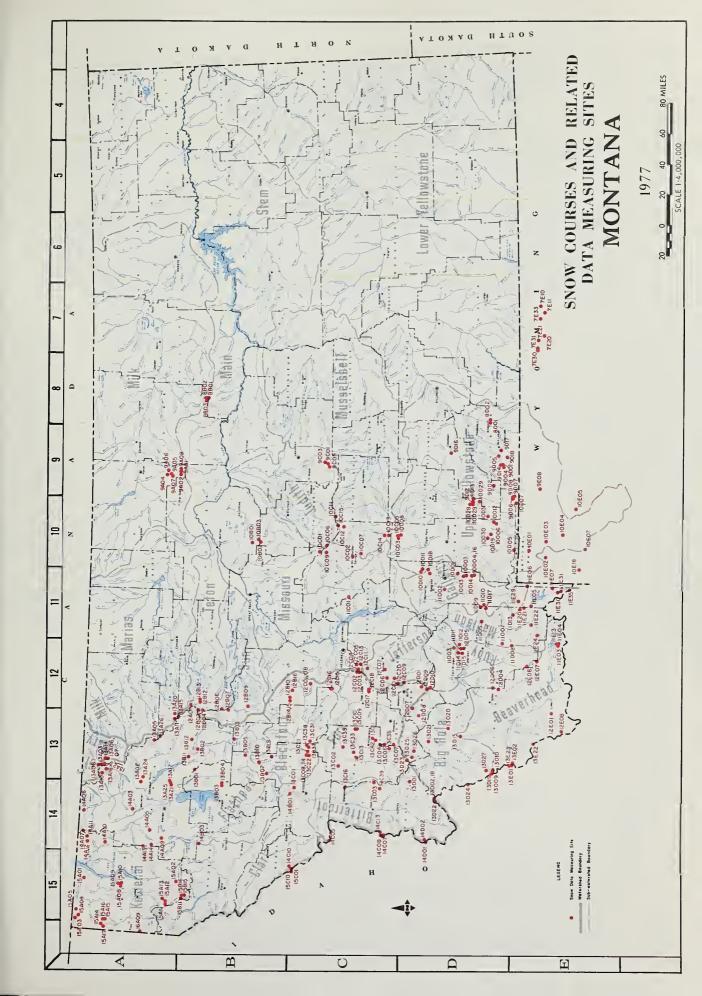


SNOW	(/	THIS YEAR		PAST R	ECORD
DRAINAGE BASIN and/or SNOW COURSE		Date	Snow Depth	Water Content	Water Conte	nt (inches)
NAME	Elevation	of Survey	(Inches)	(Inches)	Last Year	Average
HEBGEN DAM	6550	12/29	14	2.6	7.6	4.6
HELL ROARING DIVIDE	5770	1/03	31	7.2	11.6	14.1
HIGHWOOD DIVIDE	5650	12/28	23	5 • 0	5.8	-
HIGHWOOD STATION	4600	12/28	15	3.8	2.7	**
HOLBROOK	4530	1/05	28	4.04	5.0	4.3
HOOD MEADOW	6600	12/28	11	2.2	7.5	4.5
HOODOO BASIN PILLOW	6000	12/28	SP	6.4	23.4	19.1
ISLAND PARK (ID)	6310	12/31	8	1.4	8.8	6.1
KINGS HILL	7500	12/27	24	4.3	8.5	**
LAKE CAMP (WY)	7850	1/02	10	1.0	6.6	3.5
LAKE CREEK	6100	12/29	8	1.1	6.0	-
LICK CREEK	6860	12/28	10	1.9	6.3	3.9
LICK CREEK PILLOW	6860	12/28	SP	4.0	6.1	4.0
LOLO PASS (ID)	5230	12/28	26	4.2	13.8	11.7
LONE MOUNTAIN	8880	12/29	22	4.7	14.9	9.8
LOOKOUT (IU)	5250	12/30	24	4.8	11.8	15.6
LOST HORSE	5940	12/30	26	5.9	17.4	12.0
LUBRECHT FLUME	4800	12/30	9	1.2	3.4	3.1
LUBRECHT FLUME PILLOW	4800	12/30	SP	1.3	-	2.5
LUBRECHT FUREST # 3	5450	12/30	8	1.2	3.8	3.2
LUBRECHT FOREST # 4	4650	12/30	4	.7	1.0	1.8
LUBRECHT FOREST # 6	4040	12/31	4	•6	1.2	1.8
LUBRECHT HTDROPLOT	4200	12/30	9	1.0	3.5	2.7
LUPINE CREEK (WY)	7300	1/02	12	1.6	8.0	4.4
MADISON PLATEAU	7750	12/29	13	2.1	14.8	8.7
MADISON PLATEAU PILLOW	7750	12/29	SP	4.2	15.3	9.4
MARIAS PASS	5250	12/30	13	2.8	4.3	7.7
MAYNARD CREEK	6210	12/29	16	3.0	9.9	7.4
MAYNARD CREEK PILLOW	6210	12/29	SP	4.2	6.0	5.4
MEADOW CREEK PILLOW	4000	12/30	SP	3.4	.9	3 • •
MOULTON RESERVOIR	6850	12/28	6	.9	• • •	•
MOUNT LOCKHART	6400	12/30	50	4.4	13.6	-
MOUNT LOCKHART PILLOW	6400	12/30	SP	4.1	11.1	8.3
NEWTON MOUNTAIN	5600	1/03	21	4.7		
NOISY BASIN	6040	1/04	49	14.9	16.9	-
NOISY BASIN PILLOW	6040	1/04	SP	12.2	16.2	
· ·	3600	1/04		1.2	1.0	-
NOISY CREEK	7500		8		7.7	1, 6
NORRIS BASIN (WY)		1/04	25	2.2		4.6
NORTH FK. LLK CREEK	6250	1/03	15	2.4	7.4	5.6
NORTH FK. ELK CREEK PILL	6250	1/03	SP	2.3	8.1	4.7
NORTHEAST ENTRANCE	7400	12/27	15	2.6	6.6	3.6
NORTHEAST ENTRANCE PILL.	7400	12/27	SP	2.3	7.1	4.0
OLD FAITHFUL(WY)	7360	12/29	8	1.5	9.6	-
OPHIR PARK	7150	1/02	17	4.0	12.2	~ ^
PETERSON MEADOWS	7200	1/03	10	2.0	6.9	3.8
PETERSON MEADOWS PILLOW	7200	1/03	SP	1.7	9.2	0.7
PIPESTONE PASS	7200	1/02	0	• 0	5.6	2.3
POORMAN CREEK PILLOW	5100	1/01	SP	4.1	11.5	12.1
RED TOP	5260	1/03	19	4.4	40.0	-
ROCKER PEAK	8000	12/28	12	2.3	10.4	6.8



SNOW			THIS YEAR	Y	PAST R	ECORD
DRAINAGE BASIN and/or SNOW COURSE		Date	Snow Depth	Water Content	Water Conte	nt (inches)
NAME	Elevation	of Survey	(inches)	(Inches)	Last Year	Average
ROCKER PEAK PILLOW	8000	12/28	SP	2.1	11.4	7.
ROCKY BOY	4700	12/30	11	1.6	•	1.
ROCKY BOY PILLOW	4700	12/30	SP	2 • 4	3.4	1.
SADDLE MOUNTAIN	7940	12/29	50	4.2	16.1	10.
SADDLE MOUNTAIN PILLOW	7940	12/29	SP	4 • 3	16.8	11.
SAWTELL MOUNTAIN (IU)	8710	12/31	15	1.5	17.1	14.
SHOWER FALLS	8100	12/28	30	7.6	15.5	11.
SHOWER FALLS PILLOW	8100	12/28	SP	7.9	15.3	11.
SILVER RUN	6630	12/29	5	1 • 4	•	-
SILVER RUN PILLOW	6630	12/29	0	• 9	•	-
POTTED BEAR MOUNTAIN	7000	1/05	20	3.5A	6.0	7.
PUR PARK	8000	12/27	30	6.1	12.7	9.
PUR PARK PILLOW	8100	12/27	SP	7.4	13.3	10.
STORM LAKE	7780	1/03	15	3.0	9.7	5.
SUCKER CRELK	3960	12/30	2	• 3	-	-
YLVAN PASS (WY)	7100	12/29	13	2.3	10.0	5.
ARGHEE PASS (ID)	7000	12/31	11	2.0	8.2	6.
AYLOR ROAD	4080	12/30	11	1 • 4	-	-
EN MILE LOWER	6600	12/28	10	1.9	4.3	3.
EN MILE MIDDLE	6800	12/28	12	2.0	7.7	4.
EN MILE UPPER	8000	12/28	13	3.2	8,6	6.
EPEE CREEK	8000	12/29	10	1.9	9.6	-
EPEE CREEK PILLOW	8000	12/29	SP	1.9	7.9	•
HUMB DIVIUE (WY)	7900	12/29	12	1.3	11.1	9.
V MOUNTAIN	6800	12/29	11	1.9	9.1	A.
WELVEMILE CREEK	5600	12/30	25	4.8	7.7	7.
WELVEMILE CREEK PILLOW	5600	12/30	SP	3.4	9.6	6.
WENTY-ONE MILE	7150	12/30	14	2.2	10.6	7.
WIN CREEKS	3580	1/05	15	2.5A	5.0	5.
WIN LAKES	6510	12/30	32	5.8	24.0	15.
WIN LAKES PILLOW	6400	12/30	SP	6.7	26.2	16.
ALLEY VIEW (ID)	6500	12/31	8	1.4	7.8	6.
ALDRON	5600	12/30	12	2.2	3.4	-
ALDRON PILLOW	5600	12/30	SP	2.4	4.3	5.
EST YELLOWSTONE	6700	12/30	9	• 9	8.6	4.
EST YELLOWSTONE PILLOW	6700	1/01	SP	• 9	6.7	3.
HISKEY CREEK	6800	12/29	12	2.1	•	-
HISKEY CREEK PILLOW	6800	12/29	SP	1.9	11.7	•
HITE ELEPHANT (ID)	7700	12/31	11	• 7	14.0	-
HITE MILL	8700	12/27	31	5.2	20.8	•
WHITE MILL PILLOW	8700	12/27	SP	6.0	17.6	-
VILLOW CREEK	6500	12/29	9	1.5	5.4	•





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1 8	IBIA	36 4 6	500	35	130	18 11	31	23	7 7	14 20		31	30 7	20	11	3 6 5	18	23 F	3 3 3	9 25 28		31	51.0	۳۳;	17	23	17 7 17	17	9 6 5	100	23	20	222	32
3	COLUMBIA	\$700 \$600 \$500	3800	2400	3450	4300	4800	5600	3050	5200 6050 5450		5150	6750 6400 5800	4350	5150	5035	3890	4 300 4 900 9 900 900 900 900 900 900 900 9	3600 6330 7000	6100 3580 6200		7100	\$200 6950	5700	4200	7800	7200	2000	4740	4680 5450	4650 4040 4200	6250	7200 4030	7100
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	OOTENAL RIVER	Bald Eagle Peek Banfleld Mouotain Bares Creek Arres Midden	ea Trail	isn Creek limbar lar Crova fa Creek	th of July	var Creak iva Creak rkina Lake	of Soul	ron Mountain	/em Hountain	l Top thl Peak teel Olvide	LATHEAD RIVER	wer Lake	; Creek p Misery ert Mountain	rp Creek	ffin Creak Divida	d Creek Creek Roaring Divida	brook	dan Craek daral Creek sy Baaln	isy Greek Ith Pork Jocko sted Bear Nountain	Trinkus Lake Twin Graeks Upper Holland Laka													Const Park Paterson Meadows Seeley Lake R.S.	

Meas. By 3/

Range

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NDEX to MONTANA SNOW COURSES and DATA SITES

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12N 12N 12N

19 20 20

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Drainage Basin & Snow Course	BEAVERHEAD RIVE		RUBY RIVER Branham Lakes Clover Headow DAJIda Middle Hill Greek Machine Hill Greek Saugalor Mine BIG HOLE RIVER	Abundance Lake Ball Hountain Calvert Greek Barkborne Lake Barkborne Lake Percher Ridge Roothen Links Lake Trail Mod Lake Stag-Affet Lake Stag-Affet Lake	Serry Headow Coppor Mountain Plan Creek Na Perce Greek Picell Grounda Picell Grounda Rocker Peak MADISON RIVER	Black Bear Coll hoad Pour His Income Dan Lick Creek Lower Pork Lower Pour Horland Petabau Horland Petabau Horland Creek Sontial Creek Sontial Creek Mark Yellooncone Mark Yellooncone Mark Yellooncone Mark Yellooncone	Arch Palls fig. 53, fig. 54, fig. 55, fig. 56, fig. 57, fig. 58, fig. 68, fig.	Big Coulee Budder Kountain Budder Kountain Cheaman Reservoir Daddann Creek Treak Cremer Headows Treak Righton Budder Righton Budder Righton Budder Treak Tre	Edger Pass Gibe Laka Gibe Laka Twestal Twestal Twestal Twestal World in news Plus news Plus news Plus news Plus news Twestal

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57. MARY RIVER Icaberg Lake No. 3 13A03 Loopkins Lover No. 9 13A4 Many Glacier No. 7 13A07 Pisgan Fase No. 6 13A08 Permisan No. 8 13A08

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Agencies and Organizations Cooperating in Montana Snow Surveys

GOVERNMENT AGENCIES

Canada:

Water Survey of Canada, Calgary, Department of the Environment
Water Resources Service, Department of Lands, Forests and Water Resources, British Columbia
Alberta Environment, Edmonton, Alberta

Federal:

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Corps of Engineers
U.S. Department of Agriculture
Forest Service
Soil Conservation Service

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U.S. Department of the Interior
Bonneville Power Administration
Bureau of Indian Affairs
Bureau of Reclamation
Fish and Wildlife Service
Geological Survey
National Park Service

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Montana Department of Fish and Game
Montana Department of Natural Resources and
Conservation
Montana State University - Agricultural Experiment
Station
University of Montana - School of Forestry

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Montana Power Company Butte Water Company The Anaconda Company

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